ANNUAL REPORT FY12
Habitat Assessment Funded Research

Project Title: Estimating Habitat Related Variability in Natural Mortality of Juvenile White Shrimp for Incorporation into Stock Assessment Models

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Goals: The main goal of our project is to estimate natural mortality rates for juvenile white shrimp within a salt marsh in the Sabine Lake estuary (Louisiana/Texas) and incorporate this information into the new SS-3 assessment model being developed for white shrimp.

Approach: We used two different methods to estimate mortality rates within our study area. In the first approach, we conducted two mark-recapture experiments in small tidal marsh ponds. The mark-recapture data from these experiments will be used with the software Mark to estimate mortality rates. For the second method, we collected samples with a 1-m^2 drop sampler and will use shrimp length-frequency distributions from these samples to estimate mortality rates.

Brief Summary of How Funds Were Used: Most ($41,500) of the funding went to supporting the contract technical staff that assisted with collecting samples, conducting experiments, and sorting samples in the laboratory. The total cost for supplies (e.g., elastomer tags, nets, fuel, sampling bags) and to maintain and repair equipment was $1,500. We also used $2,000 in travel to cover the cost of renting GSA vehicles and per diem for field trips.

Work Completed: We completed the mark-recapture experiments July 19-28 and August 2-11, 2012. Juvenile (27-50 mm TL) shrimp were marked using visible implant elastomer (VIE) on the first day and every other day of each experiment. Marked shrimp were recaptured using a cast net on the day following each tagging event. Two ponds were used in each experiment, and a total of 1,800 and 2,600 shrimp were marked in the July and August experiments, respectively. More shrimp were marked in the August experiment because we used larger ponds in this experiment, and we wanted to increase the chance of recovering shrimp from these larger ponds. In addition, we collected 20 samples throughout the study area using a drop sampler on dates (July 18, August 1, and August 15) that bracketed the mark-recapture experiments. We are currently analyzing the mark-recapture data and also processing the drop samples.

Applications: Once completed, our project will provide natural mortality rates that can be incorporated into the SS-3 model being developed for white shrimp, which will provide more accurate results for the prediction of adult abundance. The updated and improved model will provide managers with better information to make decisions about the maximum catch of shrimp allowed in a given year.

Publications/Presentations/Webpages:

- Mace III, MM and LP Rozas (November 8th and 9th, 2012) A comparison of two different methods for estimating natural mortality rates of juvenile white shrimp *Litopenaeus setiferus***.** Gulf Estuarine Research Society Meeting, Dauphin Island Sea Lab, Dauphin Island, Alabama